

CLAIM AMENDMENTS

1. (Original) A heat-sensitive lithographic printing plate precursor comprising a support having a hydrophilic surface and a coating provided on the hydrophilic surface, said coating comprising in the order given a first layer containing an oleophilic resin soluble in an aqueous alkaline developer and a second layer capable of preventing the developer from penetrating into the first layer at unexposed areas, said second layer comprising a water-repellent compound selected from the group consisting of

- a polymer comprising siloxane and/or perfluoroalkyl monomeric units, and
- a block- or graft-copolymer comprising a poly- or oligo(alkylene oxide) and a polymer or oligomer comprising siloxane and/ or perfluoroalkyl monomeric units, and

wherein the alkali-solubility of said coating increases on heating and said coating comprises an infrared light absorbing dye characterised in that the infrared absorbing dye comprises at least one perfluoroalkyl group.

2. (Original) A lithographic printing plate precursor according to claim 1 wherein the perfluoroalkyl group is covalently linked to the infrared light absorbing dye.

3. (Original) A lithographic printing plate precursor according to claim 1 wherein the infrared light absorbing dye carries a charge and the perfluoroalkyl group is comprised in a counter ion and contains at least 6 fluorine atoms.

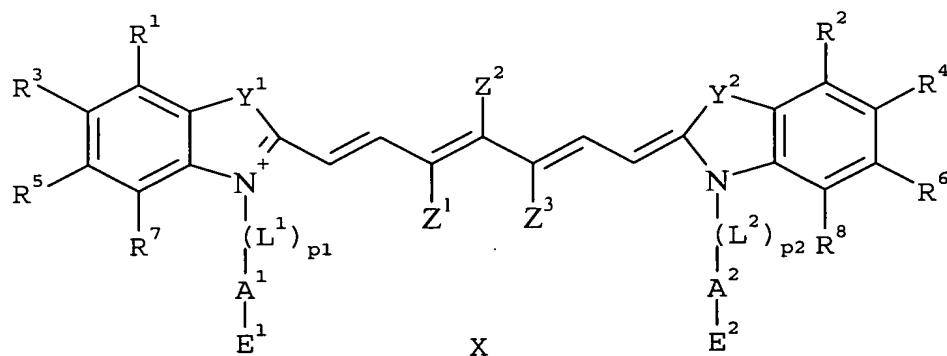
4. (Original) A lithographic printing plate precursor according to claim 1 wherein at least one perfluoroalkyl group is covalently linked to the infrared light

5. (Currently Amended) A lithographic printing plate precursor according to ~~any of the preceding claims~~ claim 1 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.

6. (Currently Amended) A lithographic printing plate precursor according to ~~any of the preceding claims~~ claim 1 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

7. (Currently Amended) A lithographic printing plate precursor according to ~~any of the preceding claims~~ claim 1 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

8. (Currently Amended) A lithographic printing plate precursor according to ~~any of the preceding claims 1-4, 6 or 7~~ claim 1 wherein the infrared light absorbing dye corresponds to the following formula:



wherein

$-L^1$ - and $-L^2$ - independently represent a divalent linking;

$-E^1$ and $-E^2$ independently represent a neutral, anionic or cationic terminal group selected from

alkyl, $-OH$, $-H$, $-Cl$, $-Br$, $-F$ (neutral groups);

$-SO_3^-$, $-SO_4^-$, $-PO_3^{2-}$, $-PO_4^{2-}$, $-COO^-$ (anionic groups);

$-[NR^aR^bR^c]^+$ (cationic group);

R^a , R^b and R^c independently represent a hydrogen atom or an alkyl group;

$-A^1$ - and $-A^2$ - independently represent $-C_vF_{2v}-$, $-[(CF_2)_2-O]_w-$,

a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p_1 and p_2 are 0 or 1;

with v and w are 2 or an integer greater than 2;

$-Y^1$ - and $-Y^2$ - independently represent $-CR^9R^{10}-$, $-S-$, $-Se-$, $-NR^{11}-$,

$-CH=CH-$ or $-O-$;

R^1 to R^{11} each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, $-NO_2$, $-O-R^d$, $-CO-R^d$, $-CO-O-R^d$,

$-O-CO-R^d$, $-CO-NR^dR^e$, $-NR^dR^e$, $-NR^d-CO-R^e$, $-NR^d-CO-O-R^e$, $-NR^d-CO-NR^eR^f$, $-SR^d$, $-SO-R^d$, $-SO_2-R^d$, $-SO_2-O-R^d$, $-SO_2NR^dR^e$ or a perfluoroalkyl group, each of said groups

may optionally comprise a terminal group E defined above as $-E^1$ and $-E^2$ and/or wherein two adjacent groups selected from R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , Y^1 and Y^2 together form an optionally substituted 5- or 6- membered ring;

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R^d , R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

Z^2 represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

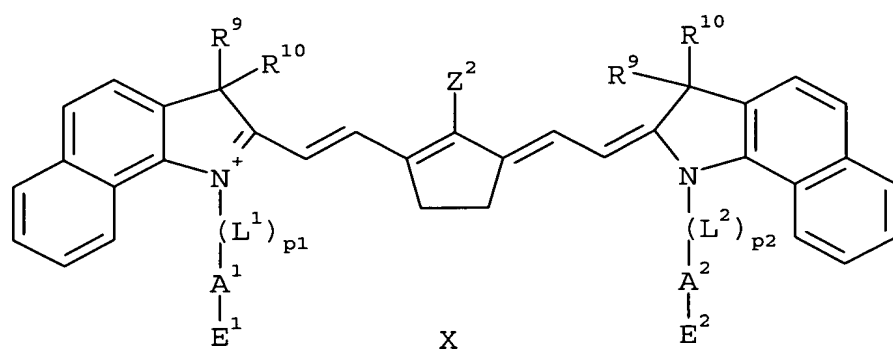
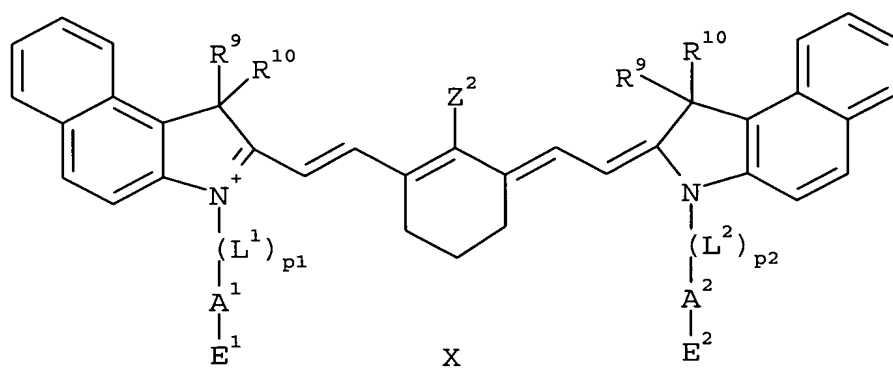
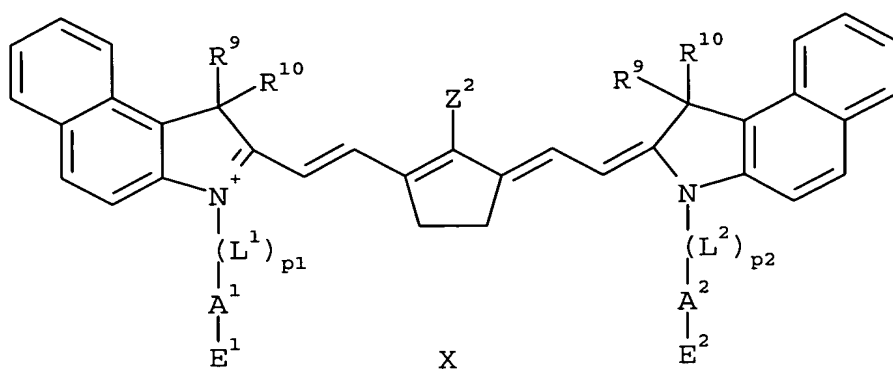
with the proviso that at least one of the following substituents contains a perfluoroalkyl group:

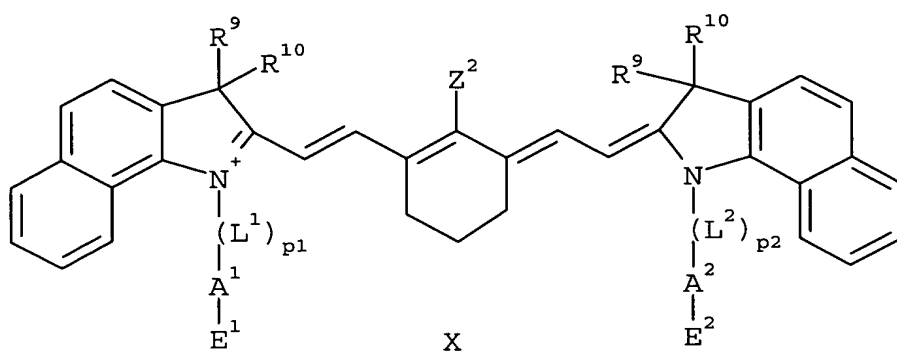
$-A^1$ -, $-A^2$ -, R^1 to R^{11} or X.

9. (Currently Amended) A lithographic printing plate precursor according to claim 8 wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2$ - or $-(CH_2)_3$ -.

10. (Currently Amended) A lithographic printing plate precursor according to ~~claims 8 or 9~~ claim 8 wherein the IR light absorbing dye corresponds to one of the following formulae:

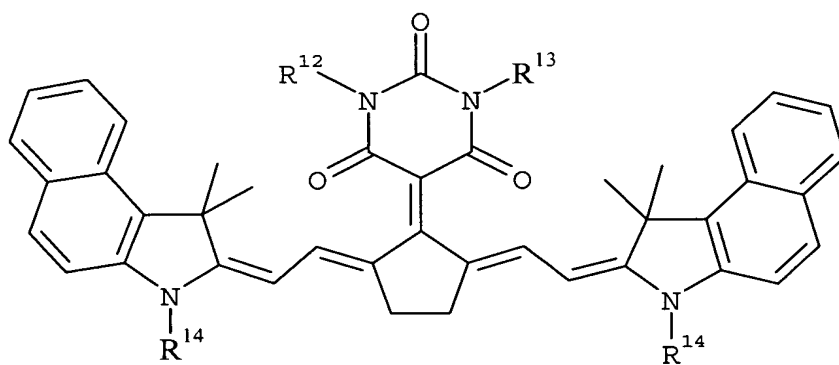
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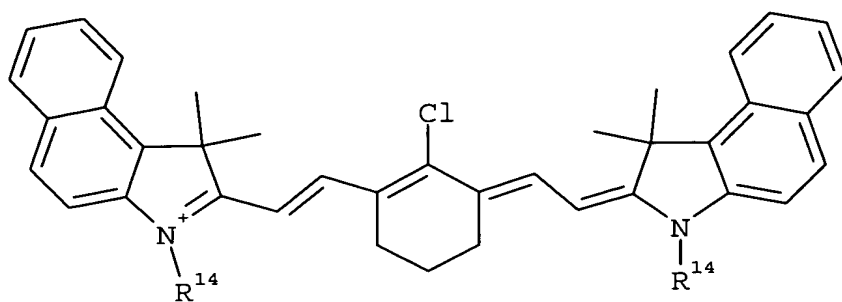


wherein p_1 , p_2 , $-L^1$ -, $-L^2$ -, $-A^1$ -, $-A^2$ -, $-E^1$ -, $-E^2$, R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

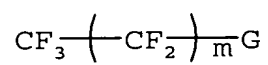
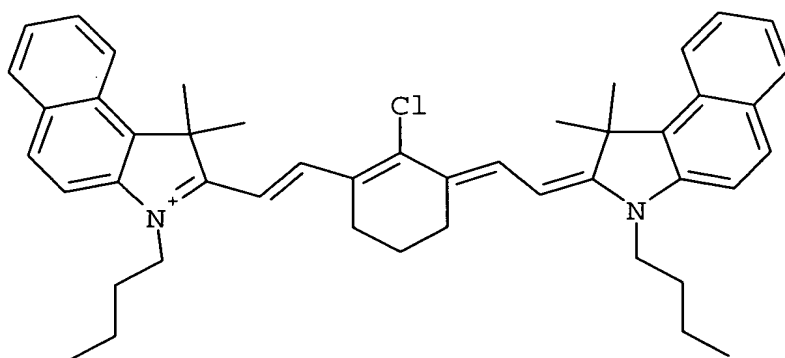
11. (Original) A lithographic printing plate precursor according to claim 8 wherein the IR light absorbing dye corresponds to one of the following formulae:



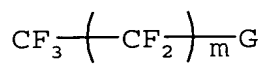
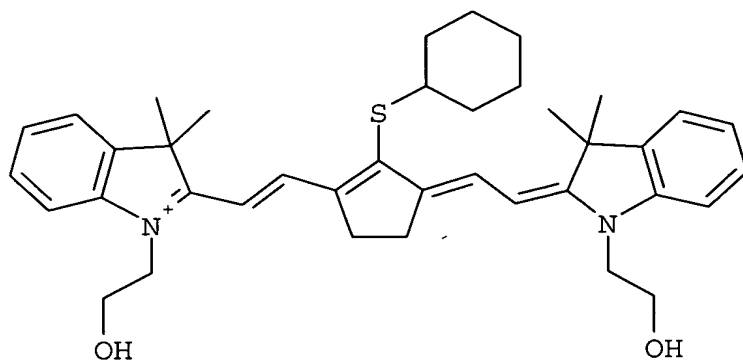
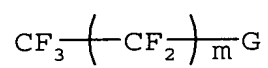
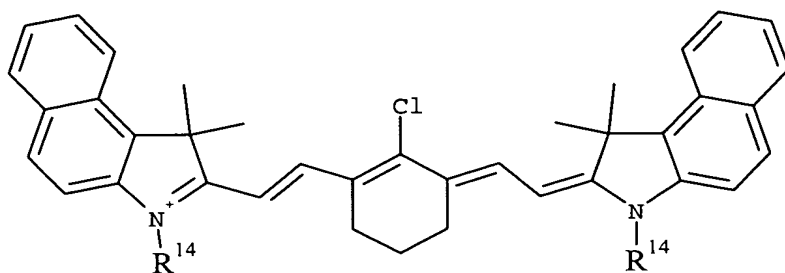
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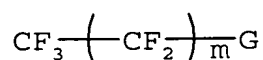
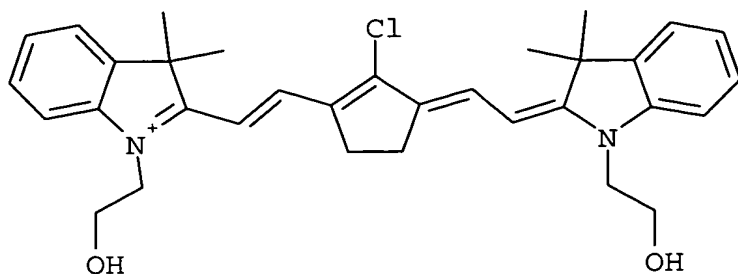
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wherein

m is 2 or an integer greater than 2;

R¹² and R¹³ independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as -E¹ and -E² in claim 8;

R¹⁴ represents $-(\text{CH}_2)_2-\text{OCO}-(\text{CH}_2)_2-(\text{CF}_2)_k-\text{CF}_3$;

with k is 2 or an integer greater than 2;

W represents Cl⁻, Br⁻, I⁻, F⁻, ClO₄⁻, BF₄⁻;

G represents SO₃⁻, SO₄⁻ or COO⁻.

12. (New) A lithographic printing plate precursor according to claim 2 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.

13. (New) A lithographic printing plate precursor according to claim 3 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.

14. (New) A lithographic printing plate precursor according to claim 4 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.

15. (New) A lithographic printing plate precursor according to claim 2 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

16. (New) A lithographic printing plate precursor according to claim 3 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

17. (New) A lithographic printing plate precursor according to claim 4 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

18. (New) A lithographic printing plate precursor according to claim 5 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².

19. (New) A lithographic printing plate precursor according to claim 2 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

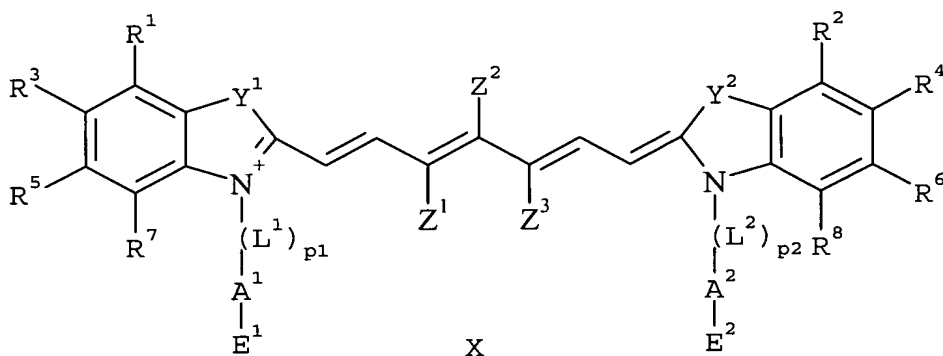
20. (New) A lithographic printing plate precursor according to claim 3 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

21. (New) A lithographic printing plate precursor according to claim 4 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

22. (New) A lithographic printing plate precursor according to claim 5 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

23. (New) A lithographic printing plate precursor according to claim 6 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

24. (New) A lithographic printing plate precursor according to claim 4 wherein the infrared light absorbing dye corresponds to the following formula:



wherein

$-L^1-$ and $-L^2-$ independently represent a divalent linking;

$-E^1$ and $-E^2$ independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃⁻, -SO₄⁻, -PO₃²⁻, -PO₄²⁻, -COO⁻ (anionic groups);

-[NR^aR^bR^c]⁺ (cationic group);

R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;

-A¹- and -A²- independently represent -C_vF_{2v}-, -[(CF₂)₂-O]_w-,

a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p₁ and p₂ are 0 or 1;

with v and w are 2 or an integer greater than 2;

-Y¹- and -Y²- independently represent -CR⁹R¹⁰-, -S-, -Se-, -NR¹¹-,

-CH=CH- or -O-;

R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO₂, -O-R^d, -CO-R^d, -CO-O-R^d,

-O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together form an optionally substituted 5- or 6- membered ring;

R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z¹ and Z³ each independently represent a hydrogen atom, an alkyl group or Z¹ and Z³ together represent the necessary atoms to complete an optionally substituted 5- or 6- membered ring;

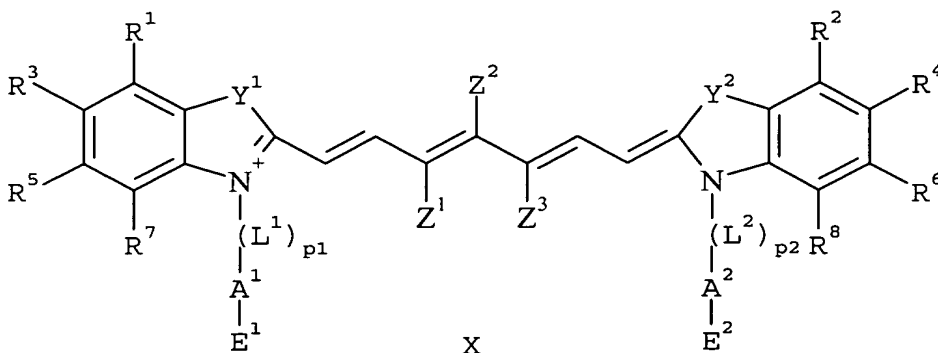
Z^2 represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group:

$-A^1-$, $-A^2-$, R^1 to R^{11} or X.

25. (New) A lithographic printing plate precursor according to claim 2 wherein the infrared light absorbing dye corresponds to the following formula:



wherein

-L¹- and -L²- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃⁻, -SO₄⁻, -PO₃²⁻, -PO₄²⁻, -COO⁻ (anionic groups);

-[NR^aR^bR^c]⁺ (cationic group);

R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;

-A¹- and -A²- independently represent -C_vF_{2v}-, -[(CF₂)₂-O]_w-,

a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p₁ and p₂ are 0 or 1;

with v and w are 2 or an integer greater than 2;

-Y¹- and -Y²- independently represent -CR⁹R¹⁰-, -S-, -Se-, -NR¹¹-,

-CH=CH- or -O-;

R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO₂, -O-R^d, -CO-R^d, -CO-O-R^d,

-O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups

may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together form an optionally substituted 5- or 6- membered ring;

R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

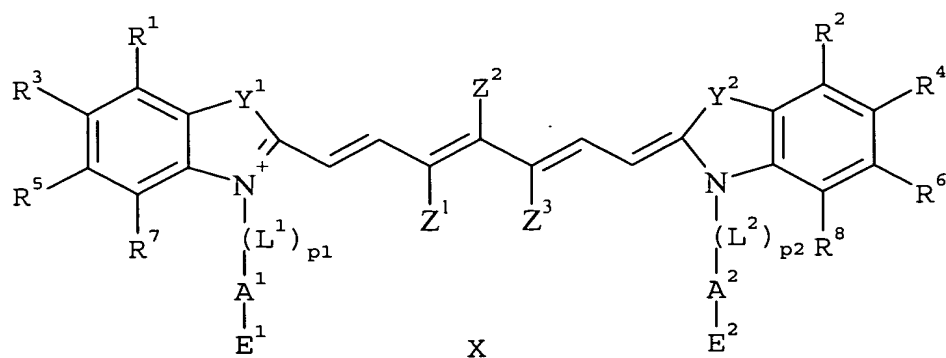
Z^2 represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group:

$-A^1-$, $-A^2-$, R^1 to R^{11} or X.

26. (New) A lithographic printing plate precursor according to claim 3 wherein the infrared light absorbing dye corresponds to the following formula:



wherein

$-L^1-$ and $-L^2-$ independently represent a divalent linking;

$-E^1$ and $-E^2$ independently represent a neutral, anionic or cationic terminal group selected from

alkyl, $-\text{OH}$, $-\text{H}$, $-\text{Cl}$, $-\text{Br}$, $-\text{F}$ (neutral groups);

$-\text{SO}_3^-$, $-\text{SO}_4^-$, $-\text{PO}_3^{2-}$, $-\text{PO}_4^{2-}$, $-\text{COO}^-$ (anionic groups);

$-\text{[NR}^a\text{R}^b\text{R}^c]^+$ (cationic group);

R^a , R^b and R^c independently represent a hydrogen atom or an alkyl group;

$-A^1-$ and $-A^2-$ independently represent $-\text{C}_v\text{F}_{2v}-$, $-\text{[(CF}_2)_2\text{-O]}_w-$,

a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p_1 and p_2 are 0 or 1;

with v and w are 2 or an integer greater than 2;

$-Y^1-$ and $-Y^2-$ independently represent $-\text{CR}^9\text{R}^{10}-$, $-\text{S}-$, $-\text{Se}-$, $-\text{NR}^{11}-$,

$-\text{CH}=\text{CH}-$ or $-\text{O}-$;

R^1 to R^{11} each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, $-\text{NO}_2$, $-\text{O}-\text{R}^d$, $-\text{CO}-\text{R}^d$, $-\text{CO}-\text{O}-\text{R}^d$,

$-\text{O}-\text{CO}-\text{R}^d$, $-\text{CO}-\text{NR}^d\text{R}^e$, $-\text{NR}^d\text{R}^e$, $-\text{NR}^d-\text{CO}-\text{R}^e$, $-\text{NR}^d-\text{CO}-\text{O}-\text{R}^e$, $-\text{NR}^d-\text{CO}-\text{NR}^e\text{R}^f$, $-\text{SR}^d$, $-\text{SO}-\text{R}^d$, $-\text{SO}_2-\text{R}^d$, $-\text{SO}_2-\text{O}-\text{R}^d$, $-\text{SO}_2\text{NR}^d\text{R}^e$ or a perfluoroalkyl group, each of said groups

may optionally comprise a terminal group E defined above as $-E^1$ and $-E^2$ and/or wherein

two adjacent groups selected from R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , Y^1 and Y^2 together form an optionally substituted 5- or 6- membered ring;

R^d , R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6- membered ring;

Z^2 represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group:

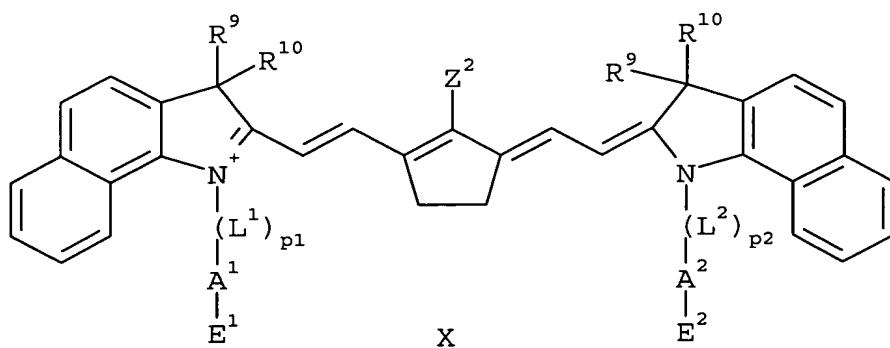
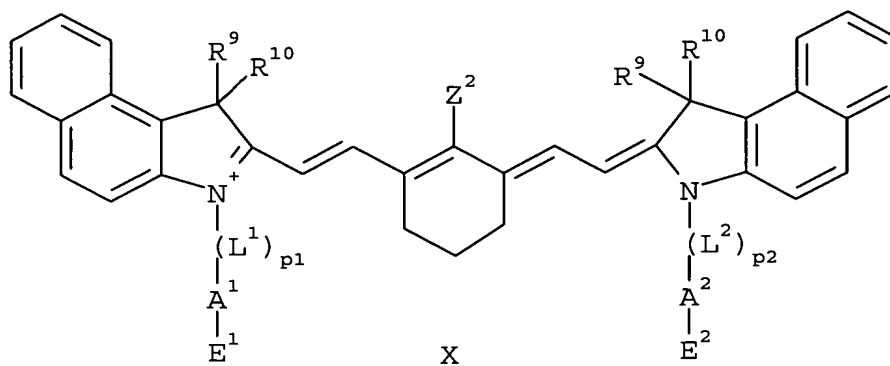
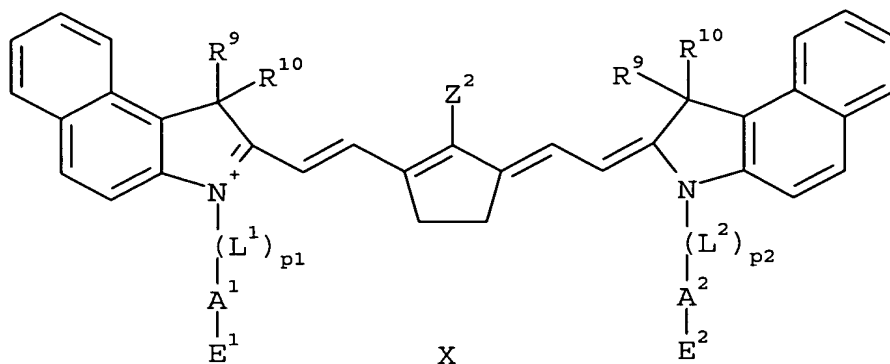
$-A^1-$, $-A^2-$, R^1 to R^{11} or X.

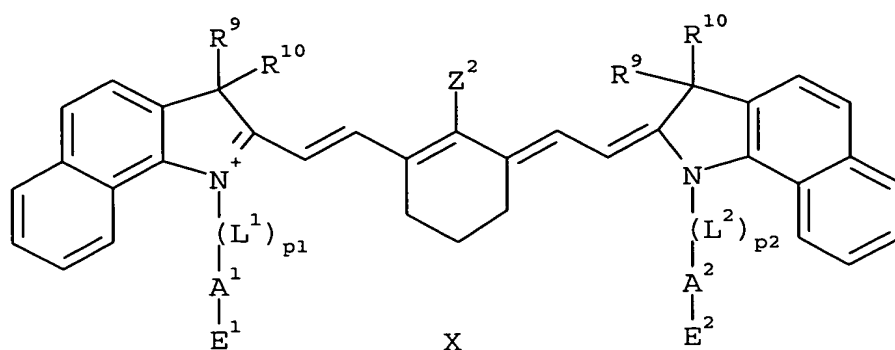
27. (New) A lithographic printing plate precursor according to claim 24, wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2-$ or $-(CH_2)_3-$.

28. (New) A lithographic printing plate precursor according to claim 25, wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2-$ or $-(CH_2)_3-$.

29. (New) A lithographic printing plate precursor according to claim 26, wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2-$ or $-(CH_2)_3-$.

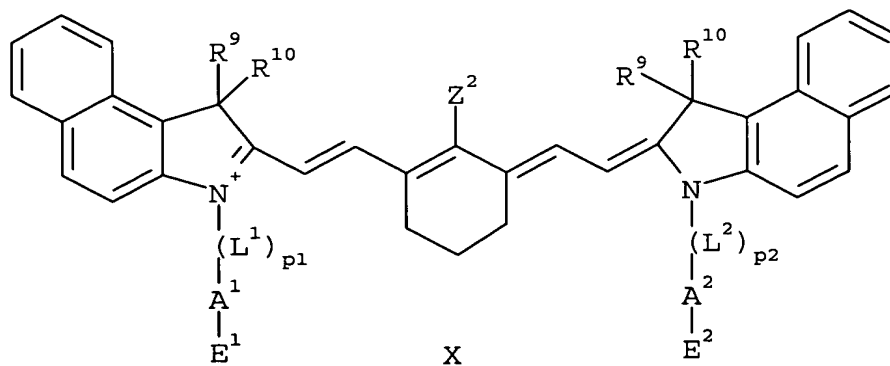
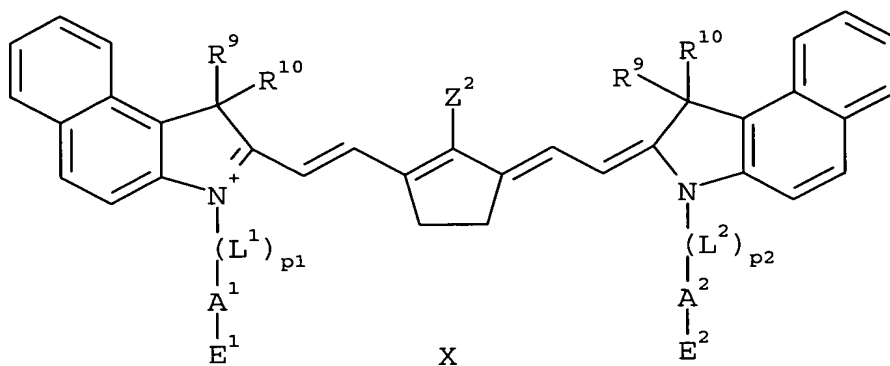
30. (New) A lithographic printing plate precursor according to claim 27 wherein the IR light absorbing dye corresponds to one of the following formulae:



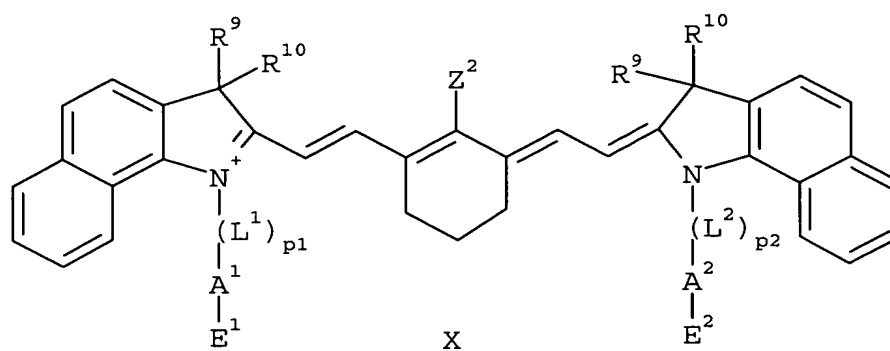
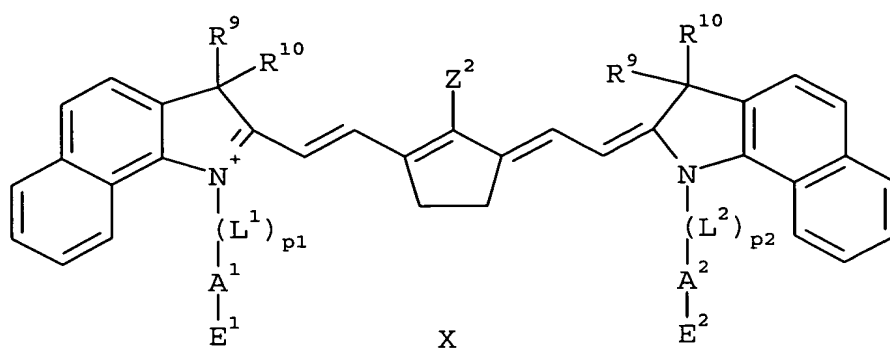


wherein p_1 , p_2 , $-L^1$ -, $-L^2$ -, $-A^1$ -, $-A^2$ -, $-E^1$ -, $-E^2$, R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

31. (New) A lithographic printing plate precursor according to claim 28 wherein the IR light absorbing dye corresponds to one of the following formulae:

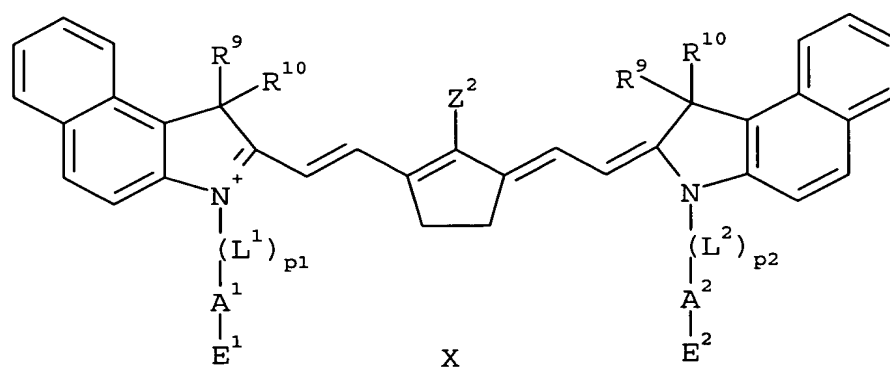


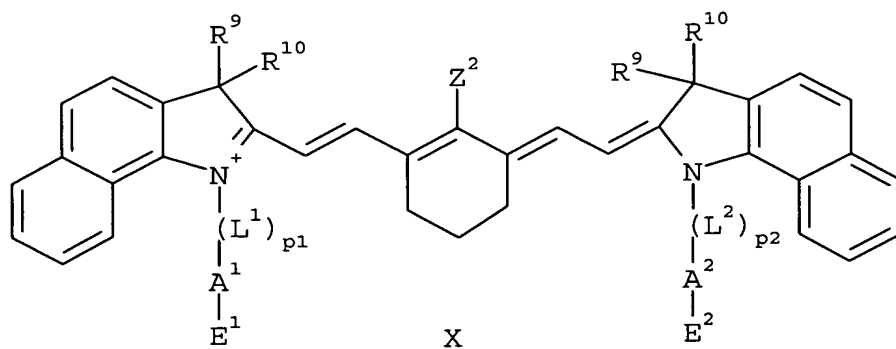
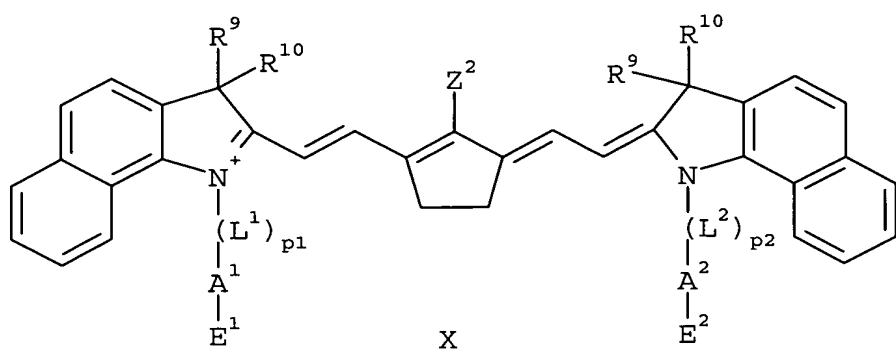
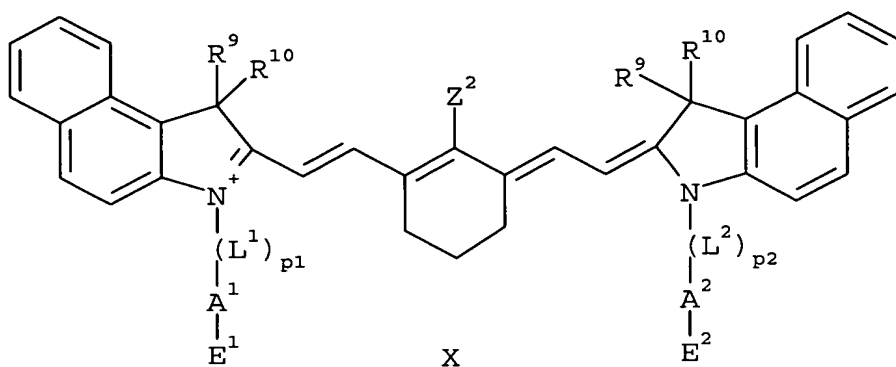
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wherein p_1 , p_2 , $-L^1$ -, $-L^2$ -, $-A^1$ -, $-A^2$ -, $-E^1$ -, $-E^2$, R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

32. (New) A lithographic printing plate precursor according to claim 29 wherein the IR light absorbing dye corresponds to one of the following formulae:

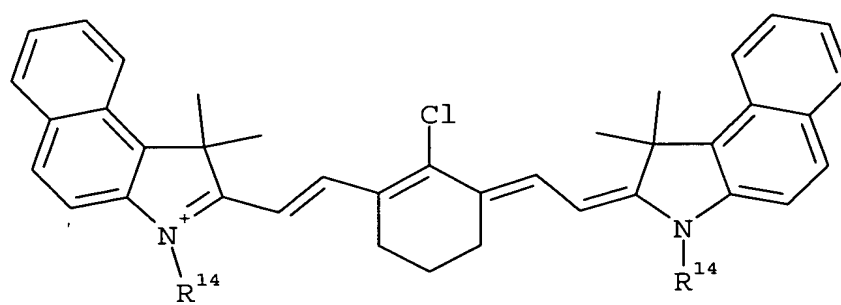
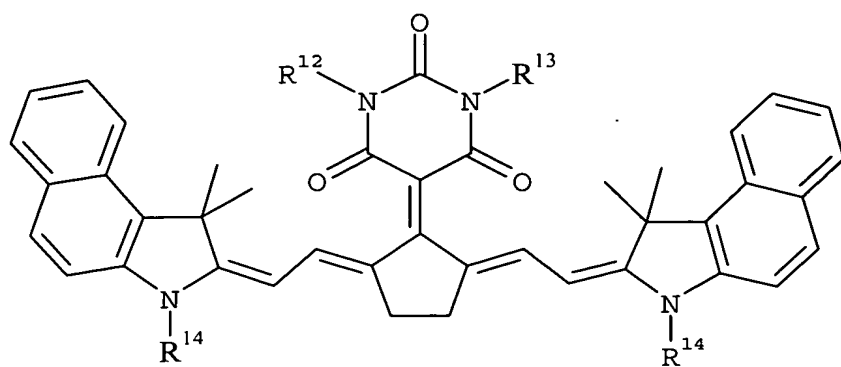




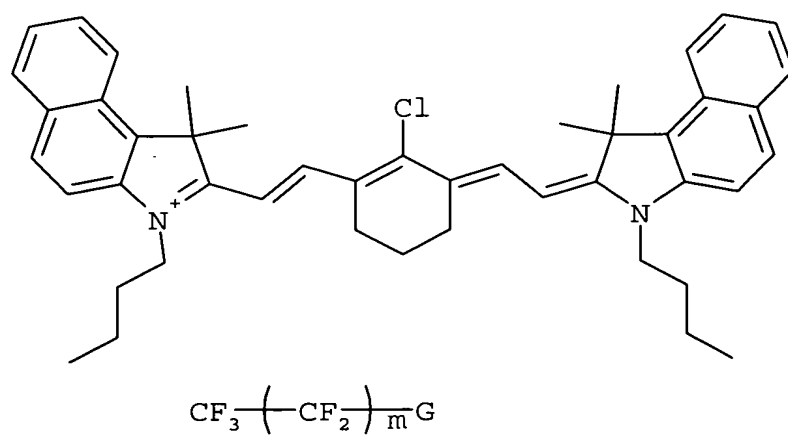
wherein p_1 , p_2 , $-L^1$ -, $-L^2$ -, $-A^1$ -, $-A^2$ -, $-E^1$ -, $-E^2$, R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

33. (New) A lithographic printing plate precursor according to claim 30 wherein the IR light absorbing dye corresponds to one of the following formulae:

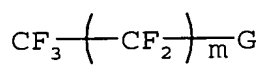
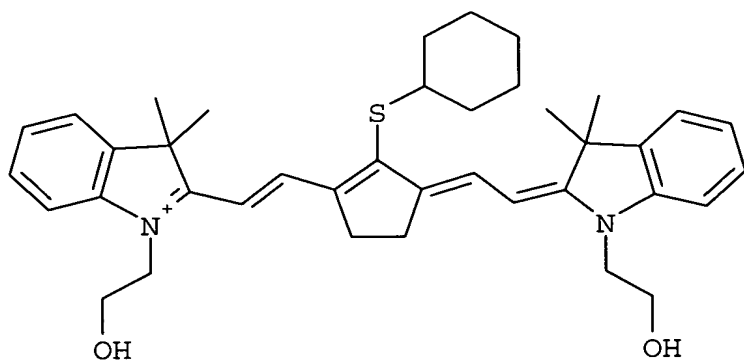
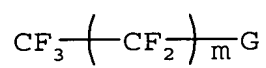
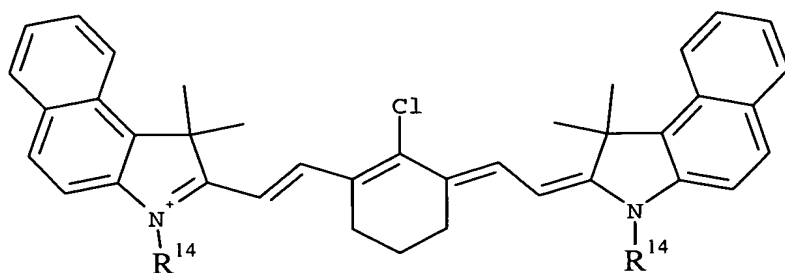
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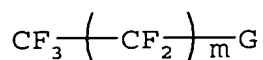
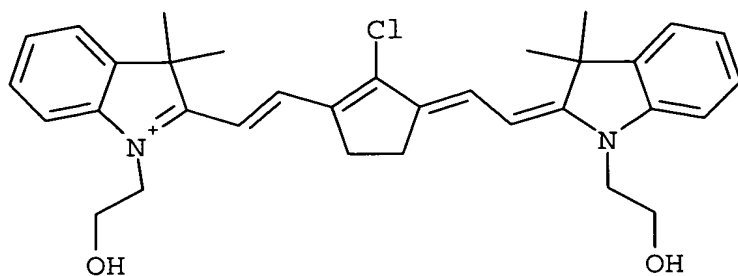
W



In re Appln. of Deroover et al.
Application No. Unassigned



In re Appln. of Deroover et al.
Application No. Unassigned



wherein

m is 2 or an integer greater than 2;

R^{12} and R^{13} independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as $-\text{E}^1$ and $-\text{E}^2$ in claim 8;

R^{14} represents $-(\text{CH}_2)_2-\text{OCO}-(\text{CH}_2)_2-(\text{CF}_2)_k-\text{CF}_3$;

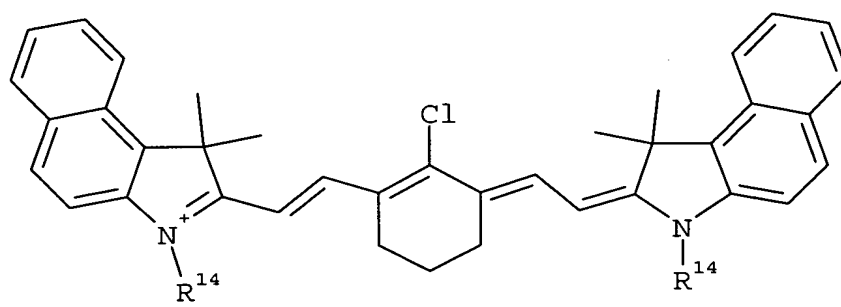
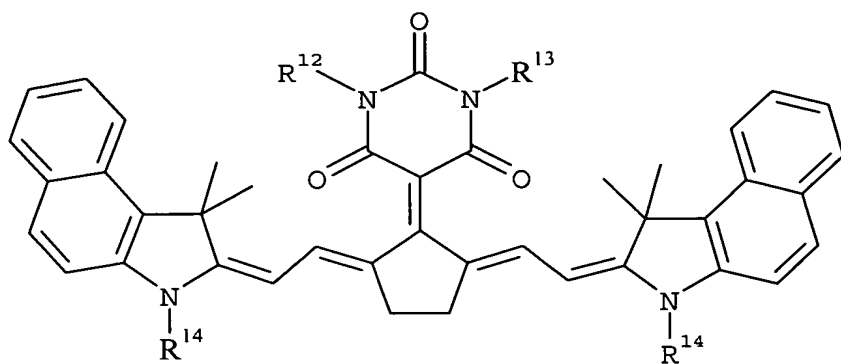
with k is 2 or an integer greater than 2;

W represents Cl^- , Br^- , I^- , F^- , ClO_4^- , BF_4^- ;

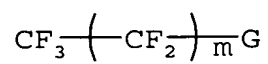
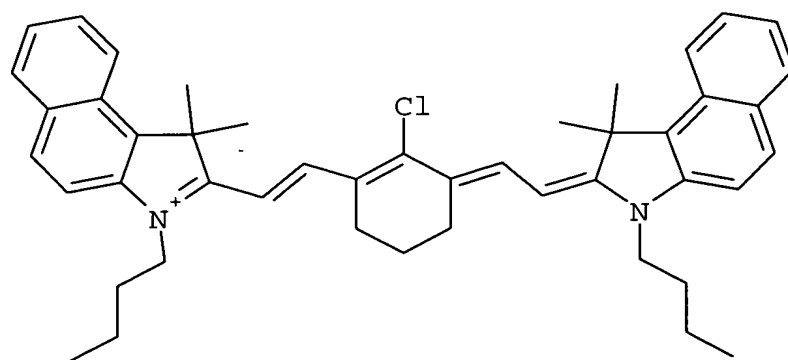
G represents SO_3^- , SO_4^- or COO^- .

34. (New) A lithographic printing plate precursor according to claim 31 wherein the IR light absorbing dye corresponds to one of the following formulae:

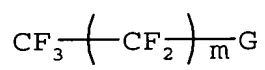
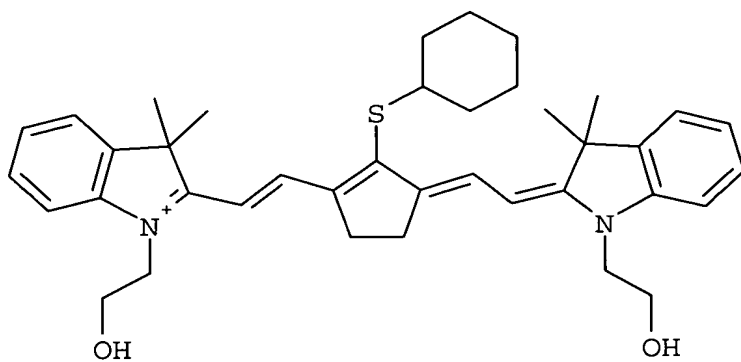
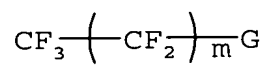
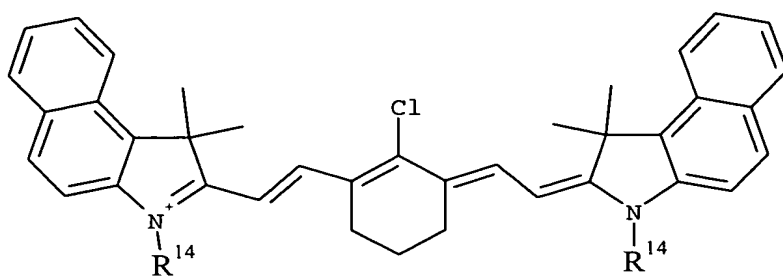
In re Appln. of Deroover et al.
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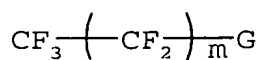
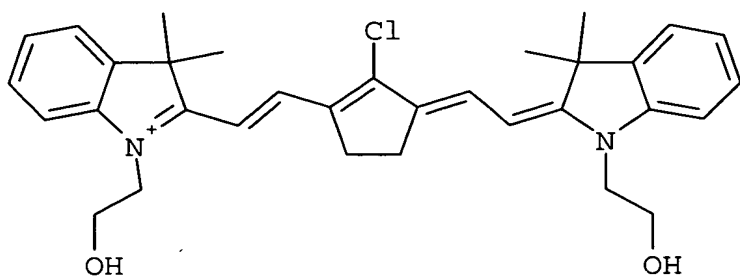


W



In re Appln. of Deroover et al.
Application No. Unassigned





wherein

m is 2 or an integer greater than 2;

R^{12} and R^{13} independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as $-\text{E}^1$ and $-\text{E}^2$ in claim 8;

R^{14} represents $-(\text{CH}_2)_2-\text{OCO}-(\text{CH}_2)_2-(\text{CF}_2)_k-\text{CF}_3$;

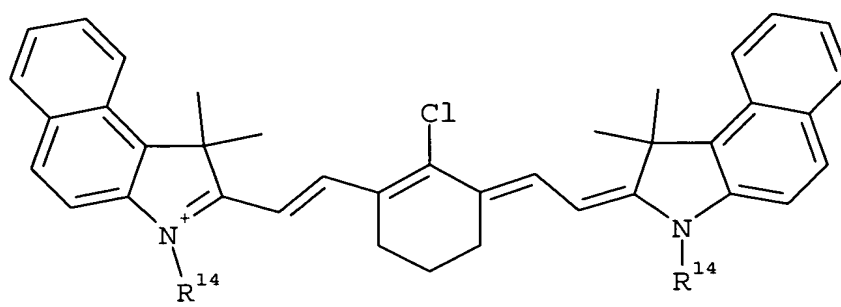
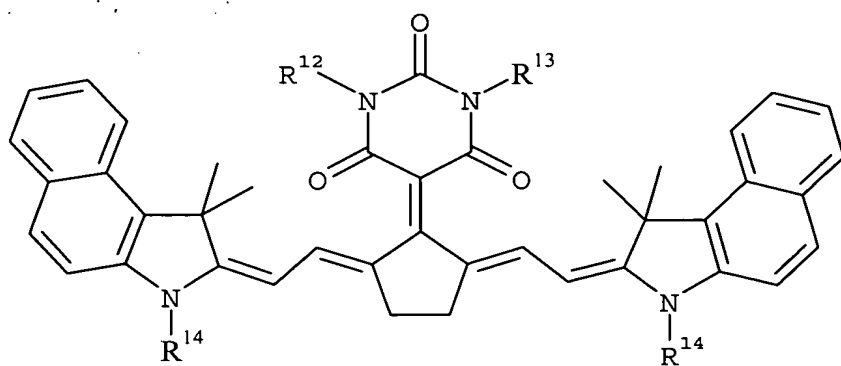
with k is 2 or an integer greater than 2;

W represents Cl^- , Br^- , I^- , F^- , ClO_4^- , BF_4^- ;

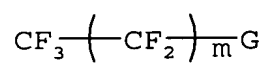
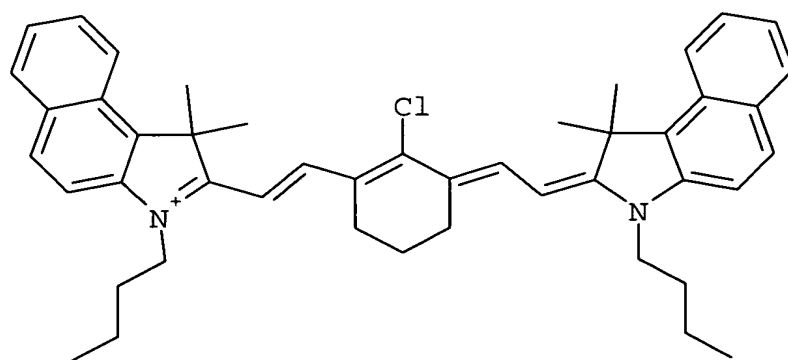
G represents SO_3^- , SO_4^- or COO^- .

35. (New) A lithographic printing plate precursor according to claim 32 wherein the IR light absorbing dye corresponds to one of the following formulae:

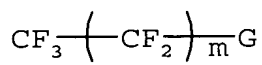
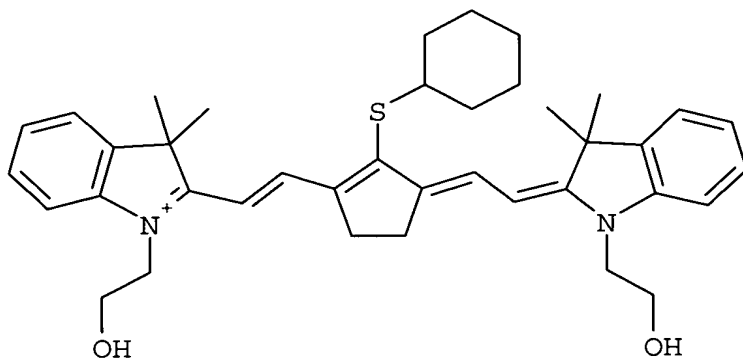
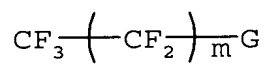
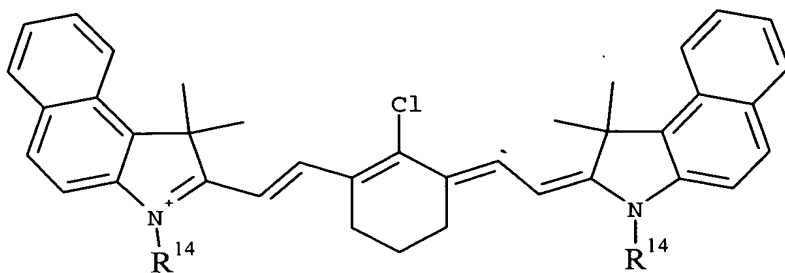
In re Appln. of Deroover et al.
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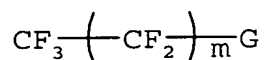
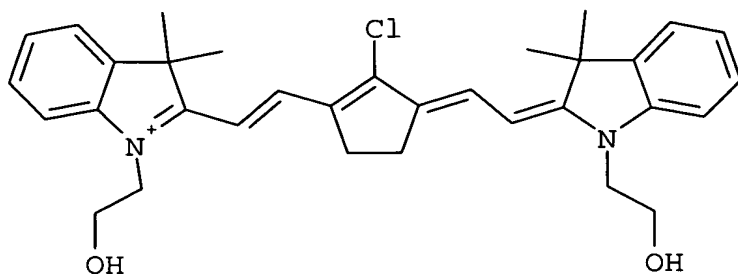
W



In re Appln. of Deroover et al.
Application No. Unassigned



In re Appln. of Deroover et al.
Application No. Unassigned



wherein

m is 2 or an integer greater than 2;

R^{12} and R^{13} independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as $-\text{E}^1$ and $-\text{E}^2$ in claim 8;

R^{14} represents $-(\text{CH}_2)_2-\text{OCO}-(\text{CH}_2)_2-(\text{CF}_2)_k-\text{CF}_3$;

with k is 2 or an integer greater than 2;

W represents Cl^- , Br^- , I^- , F^- , ClO_4^- , BF_4^- ;

G represents SO_3^- , SO_4^- or COO^- .